



Newsletter n°5: Special focus on adaptation of Cork Oak landscapes

Cork oak forests are unique. They occur naturally only in seven Mediterranean countries (Algeria, France, Italy, Morocco, Portugal, Spain, and Tunisia). These landscapes are mainly prized as a source for cork stoppers, the backbone of the cork economy. Cork is also used in the building sector for insulation and flooring as well as in several kinds of manufacture. However, the economic and social significance of cork oak forests goes well beyond cork production and industry.

A wide variety of other non-wood forest products (NWFPs) such as **pasture for livestock, honey, mushrooms, acorns, berries, medicinal and aromatic plants and game** are produced in cork oak woodlands, contributing to people's livelihoods and food security.

Cork oak forests provide a wide range of environmental services, including biodiversity conservation, soil conservation, fire prevention, protection of territories against mega fires, resilience to climate change and desertification, carbon fixation, water table recharge and run-off control. The importance of these products and services is often unrecognized.

Cork oak forests are affected by degradation and loss due to different pressures and drivers: decline in the global cork stoppers market as a result of the growing use of substitutes for bottle stoppers, poor governance, lack of investment and management, over-exploitation of cork oak forest resources (such as through overgrazing) and climate change.

To address these complex situations and problems, this year, the [Silva Mediterranea Cork Oak Working Group](#) has developed its programme of work and reviewed its composition taking a more inclusive and holistic approach. Indeed, partnership development is the key for success if we want to achieve sustainability of the environmental, social, economic and cultural values of cork oak forests.

The Silva Mediterranean Cork Oak Working Group intends to act as a common Pan-Mediterranean platform allying countries, institutions, private and public sector, NGOs and local communities to:

- Build a Mediterranean strategy for the conservation, sustainable management, restoration and promotion of cork oak forests' social, cultural, economic and environmental values and products;
- Foster South-North synergies and collaboration on main cork oak issues.

The Work Plan of Silva Mediterranea Working Group on Cork Oak is based on:

- **Promoting best practices** (sustainable management and restoration) through setting-up a network of cork oak landscapes and territories;
- **Promoting and facilitating the development of joint projects and programmes** (co-management, enterprises of local communities, research, adaptation to climate change, etc.) and relevant fund-raising;
- **Putting in place a knowledge centre on cork oak;**
- **Supporting the establishment of monitoring and evaluation systems on the state of cork oak forests** and the impact of management practices;
- **Supporting the development of long-term and large-scale capacity building programmes** on cork oak forests issues including cork harvesting at both national and Mediterranean levels;
- **Implementing a communication and marketing strategy for cork oak forests and derived products and services** using tools such as labelling and certification, payment for environmental services, and targeting wine and bio-architecture sectors and forest-related and green industries.

In this issue of the *Silva Mediterranea* Newsletter, we will be reporting on relevant activities that were implemented during 2010 including: (i) the outcomes of the meeting [VIVEXPO2010](#) organized in June 2010 by the [Institut Méditerranéen du Liège](#) (Vivès, 17/18 June 2010) addressing the issue of climate change impacts on cork oak forest landscapes and their adaptation, as well as (ii) the photo exhibition organized by the FAO Silva Mediterranea Secretariat on "the art of cork manufacturing in Sardinia", hosted at FAO headquarters during COFO 2010. *(This exhibition was coupled with wine serving of sponsored and donated Mediterranean wines (from Silva Mediterranea countries/ regions and partners to whom we would like to express our special thanks in this special newsletter issue focused on cork oak).*

**Maria Carolina VARELA
and Ramon SANTIAGO BELTRAN**
Coordinators of the Silva Mediterranea
Cork oak Working Group

News of Silva Mediterranea partners:

Second Mediterranean Forest Week in Avignon

For further information: <http://www.fao.org/forestry/65366/en/>

MEDPINE 4, the 4th International Conference on Mediterranean Pines will be held in Avignon, France, on June 6-10, 2011. You can find more information at: <https://colloque.inra.fr/medpine4>

International Symposium on "Cork oak and climate change" - Vivès - VIVEXPO 2010

On 17 and 18 June 2010, experts from the cork world met in Vivès (Pyrénées-Orientales) on the occasion of the 10th edition of the traditional biennial meeting VIVEXPO, for a workshop entitled "Cork oak and climate change". This was a unique opportunity for representatives from different cork producing countries to exchange experiences on this important issue, whose effects are already visible in the Mediterranean. Indeed, the Mediterranean cork oak forests are at the forefront of climate change and adaptation of these multifunctional landscapes must be approached with a view to address the following key questions:



1. How will climate change affect cork oak forests?
2. What changes caused by health and fire hazards can already be observed?
3. Should we change the practices of cork oak silviculture or will the natural genetic variability of cork oak allow a "spontaneous" adaptation of cork oak forests to climate change?
4. Is industrial cork quality affected by climate change?
5. How can cooperation between stakeholders along the cork value chain contribute to adaptation of cork oak forests?



Here are some of the main issues discussed during these two days of debate and exchanges, which took place between cork oak experts during the round table of Thursday, June 17, 2010, and with the public present at the conference of Friday, June 18, 2010, chaired by Jacques Arnaudès, Mayor of Vivès and Chairman of the Mediterranean Cork Institute (*Institut Méditerranéen du Liège based in Vivès*). From these discussions there appear –to be few certainties about the flexibility of cork oak and its high level of adaptability to both droughts - as illustrated in studies presented by Rachid Tarik Bouhraoua, lecturer in the Department of Forestry at the University of Tlemcen (Algeria) - and temperature increases- as highlighted in studies presented by Ramon Santiago Beltran, Engineering Department of Renewable Natural Resources Institute of the Spanish IPROCOR.

1. How will climate change affect cork oak forests?

According to research by Enrique Torres, Professor at the University of Huelva (Spain), **changes in temperature and precipitation could result in relocation of cork oak forests**, Nevertheless **"We expect a shift of potential cork oak areas for reforestation to the north and to higher altitudes"**. This is confirmed by the computer modeling done at the University of Extremadura (Spain) by Angel María Felicísimo, and presented at the Roundtable VIVEXPO 2010 by Ramón Santiago Beltran: *"There are several scenarios in the models used, the worst forecast a virtual disappearance of suitable areas for the cork oak in the south-west of Spain"*, area where it is today mainly present nevertheless, compensated by *"opening of new cork oak territories in the North"*. **Logically, if cork oak had to desert regions where climatic conditions worsened, it could in future extend its range northward.**

In the Maghreb, as shown by the modeling work done by Mr. Ghazi Gader, Tunisian expert in the framework of a cooperation project of the GTZ on Climate Change: *"There is no possibility of evolution and extension of cork oak forests in Tunisia"*. Indeed, if climate change continues, northward extension of the Tunisian cork oak forests will not be possible: **"There will be a drastic reduction in areas with favorable conditions for the cork oak in Tunisia with overall fragmentation of habitats"**. But it is worth noting that a "reduction in areas with favorable conditions for cork oak forests" does not necessarily mean that they will disappear completely from those areas. Indeed, **the climate models used predict changes in temperature and rainfall, but they cannot however take into account the adaptive capacity of forest ecosystems**. The remarkable adaptability of cork oak, which after all is a tree whose bark is removed at regular intervals, **allows us to remain optimistic about the future of cork oak forests and landscapes as one of the main barriers against desertification in many regions all over the Mediterranean, and a habitat of outstanding diversity in our latitudes.**

2. What changes caused by health and fire hazards are already observable?

Climate change will affect not only the physiology of trees, but the whole fauna of cork oak forests, including pathogens. Mohamed Lahbib Ben Jamaa, a researcher at INRGREF (Tunisia) considers that: *"Insects are good indicators of climate change because their life cycle is short"*. **Rather than the increase of average temperatures, it is the increase of extremes that affects insect populations more heavily.**

For example, in Tunisia, the “gypsy moth” (*Lymantria dispar*), which is the most common primary pest in cork oak forests, saw its cycle disrupted by extreme temperatures above 45 ° C, while on the other hand we have seen the emergence of species with earlier life cycle, such as “green oak tortrix” (*Tortrix viridana*) or “hibernating leafless” (*Erranis defoliaria*). For France, the continued growth of pine processional caterpillar (*Thaumetopoea pityocampa*) to the north is regarded by researchers as a consequence of global warming.

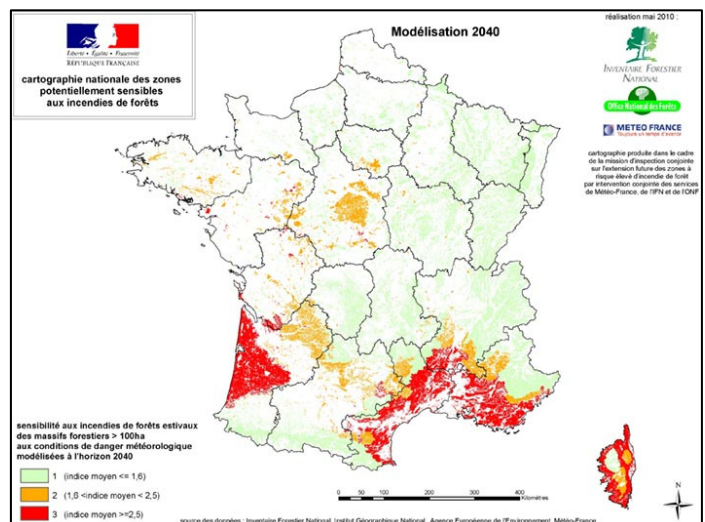
However, as regards the dieback observed in cork oak forests, French experts like M. Bernard BOUTTE are more measured: **“We observed forest decline after each climate crisis - whether for the cork oak or other Mediterranean species - all species are affected to different degrees, but only in very localized areas”.**

The health situation of cork oak forests in the Department of Var (France) is closely monitored by Louis Amandier, engineer at CRPF Provence-Alpes-Cote d'Azur (France). Alerted by the abnormal mortality observed since the late 1990s, he has established a network of observation plots since 2003. Monitoring of these plots has made it possible to establish a clear link between the presence of Platypi (*Platypus cylindrus*) and tree health, although he says: **“The decline is always multifactorial”**

For Agostino Pintus, Director of the Research Department on Cork and silviculture of AGRIS in Sardinia (Italy), the effect of climate change may also result in the emergence of new pathogens now marginal, that could become dangerous under new climate conditions. **This would apply especially in the case of *Cinammomi Phytophthora* (root fungus responsible for ink disease) or even *Biscogniauxia mediterranea* (agent responsible of the anthrax).** Mohamed Ben Jamaa also fears a change in the pathogenicity of some fungi associated with Platypi (*Platypus cylindrus*). For Rachid Tarik Bouhraoua, stands of cork oak forests planted with conifers have the worst health situation: **“The dieback observed in Algeria is not related to climate change, but rather caused by the introduction of pines and fires. [...] Climate change has a very negligible impact. ”**

As regards fire hazards, Eric Rigolot, expert on forest fires at INRA in Avignon (France), presented some results of the overall study conducted in France on the risk of forest fires in France in the context of climate change (See *Silva Mediterranea Newsletter - Special Focus on prevention of forest fires - Alain CHAUDRON / Christian CHATRY*). He confirmed that whilst “only” 33% of French forests are sensitive today to forest fires as much as 58% would be sensitive in 2060 (See **Map Modeling for the year 2040**).

He also explained that: *“In other countries more exposed, like Spain or Greece, there was already a highly significant correlation between forest fires and climate change”*. Based on this observation, it seems unrealistic to think that governments have the ability to invest more in fighting fires and overcome this problem in the “new areas to be affected”. **The fire season is expected to be longer and more frequent and to affect more extensive areas while there will be a shortage in resources for early warning and fire fighting”.** **Even with early warning and very efficient means to fight against forest fires, these cannot be efficient during exceptional years such as in 2003 ”.** He suggested that moving towards a form of forestry that will allow “ self-protection” of forest ecosystems is the best solution, indicating that a forest which is well managed and harvested is protected against forest fires.



Referring to strategies that focus on prevention of forest fires, Daniel Bourguin, Head of the Unit in charge of forests in the French State Departmental Office in the “Pyrenées-Orientales”, said during the debates on June 18, 2010 that the presence of cork oak can be extremely valuable in areas called DFCI in France (Areas of Protection of Forests Against Fire). Indeed, cork oak forests represent one of the few economic challenges in forestry within the Mediterranean. Actions targeted at improving the management of cork oak forests generally allow for achieving a combination of several objectives in terms of territories development: (i) protection against fires, (ii) production of cork and, often, (iii) silvopastoralism.

In the Maghreb, the situation seems quite different due to the sociological component of these territories. According to Mr. Mohamed Ben Jamaa: **“There are few forest fires in Tunisia because of the massive overgrazing that prevents development of forest fuel. Moreover, the forest is more densely populated and, consequently, residents may intervene against fires more quickly”.** Overgrazing, a phenomenon considered as negative for soil conservation and natural regeneration, becomes, in this case, an asset in the fight against fires.

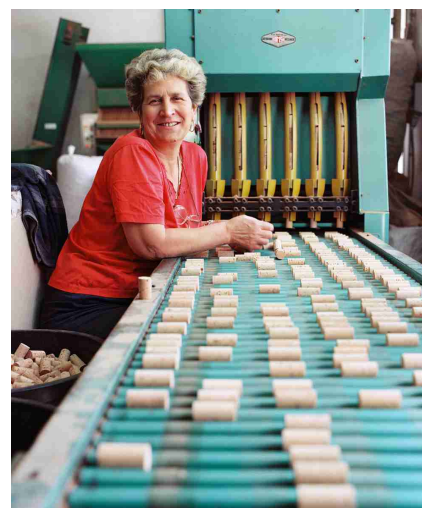
3. Should we change the practices of cork oak silviculture or will the natural genetic variability of cork oak allow a "spontaneous" adaptation of cork oak forests to climate change?

According to Agostino Pintus, Director of Research in the Cork and Forestry Service of AGRIS Sardegna, it is imperative to better take into consideration rainfall, which remains the main limiting factor of forest growth in the Mediterranean: *"We must adopt silvicultural measures to regulate the water regime. [...] We must avoid introducing species which need a lot of water [...] and avoid undertaking works that disturb the soil and forest litter"*. **Maria Carolina Varela, a researcher at the National Institute of Biological Resources of Portugal (and coordinator of the *Silva Mediterranea* cork oak working group), confirms that the water balance is highly favorable for cork oak in comparison with other species such as eucalyptus. She also explains the need for further studies on the genetic variability of cork oak for genetic improvements in the quality of cork.** This point was confirmed by professionals of cork industry attending the Vivès conference, including Dominique Tourneix, President and Director-General of the company Diam Bouchage. Many experts present at Vivès agreed that the adaptation of Mediterranean forests to climate change (including cork oak forests) occurs mainly through **diversification of species, genetic diversification and diversification of the structure of the stands. In terms of carbon sequestration it appears that cork oak ability is relatively low compared to other tree species (one tonne per hectare per year for the cork oak as compared to three tonnes per hectare per year for poplar).** By cons it has a much better longevity because it continues to store carbon throughout its operating cycle, for nearly **two centuries, against only few decades** for the fast-growing species and much less water balance favorable than cork oak trees.

4. Is industrial cork quality affected by climate change?

The quality of cork is the aspect that primarily concerns the cork stoppers industry. For even if cork oak forests could accommodate a changing climate with more droughts, how will this affect the growth of its bark?

The phenomenon has been studied for a dozen years in the West of Algeria by Rachid Tarik Bouhraoua. He observed that the cork from the same tree kept the same porosity, but grew more slowly in a situation of prolonged water stress: **"A declining tree loses 30% of growth in thickness [...] there is therefore a close relationship between health and productivity of the stand, characterized by the rate of growth of cork"**. A decrease in site quality can affect the thickness of the cork. The observations of Enrique Torres show that we will have to change cork harvesting rotations in several regions: **"It will be necessary to decrease the frequency of cork harvesting from 9 years to 11 or 12 years"**. Concerning porosity (*which is an essential criterion for the quality of cork stoppers*): **"The number of lenticels will not decrease, but their diameters will. This is pretty good for the quality of cork.** Harvesting season will also certainly be affected. Already, during particularly dry summers, the cork is almost difficult to harvest from mid-July (cork doesn't rise easily), whereas usually the harvesting season ends a month later: **"Cork harvesting will be postponed, i.e. it should start earlier in the year and also finish earlier, but these changes will call for the need of adapting legislation in the cork-producing countries"**.



Climate change also brings the experts to address the broader question of taking into account environmental issues in the market of cork stoppers. The Cork European Confederation is in the process of reviewing its International Code for Cork Stoppers manufacturing with a view to request cork manufacturers to buy part of their raw material in areas receiving guarantees of sustainable forest management (*forests certified by an independent certification body*). Forest certification could become the best way for owners to showcase their good forest management, not necessarily by the added value it is likely to provide to cork products, but mainly because it requires from the manager a broader vision of their own forests, more multifunctional and more global. The number of companies with a certified chain of custody as well as the area of certified cork oak forests continues to increase in the Mediterranean.

To conclude, can we say that the situation of cork oak forests is a cause for concern? Definitely more for Maghreb countries, (*at the forefront in the context of global warming*) than for northern countries of the Mediterranean basin, which have refuge areas for the cork oak forests. The inevitable reduction in areas favourable for cork oak must be combated by foresters' efforts to maintain existing stands and also to establish new plantations in areas where it is now only marginally present. **However, at present, it is much more the economic situation of the cork industry which has raised fears over the medium term.** That was the main message from Maria Carolina Varela, Coordinator of the *Silva Mediterranea* Cork oak working group: **"The plasticity of cork oak gives us great hope for adaptation of cork oak forests to climate change – it is rather its economic decline that gives cause for concern."**

Renaud PIAZZETTA
 Institut Méditerranéen du Liège
 Vivès – France

Message from Moujahed Achouri on the occasion of his departure from the FAO Forestry Department



Dear colleagues and friends,

I would like to inform you that I have been appointed Deputy Regional Representative for the Near East/FAOR in Egypt by the FAO Director-General. Therefore, I am leaving the Forestry Department to move to Cairo for my new assignment. In this context, I would like to take this opportunity to thank you all for the support and assistance you provided to me personally and to the Forest Conservation Team (FOMC), FAO Forestry Department, which hosts the Secretariat of Silva Mediterranea Committee. It is due to your direct input and support that Siva Mediterranea activities and networking have increased their visibility at national and regional levels and are so well appreciated in-house and by member countries and partners. I

would look for your continued support to the Secretariat in order to keep up the ongoing momentum and to ensure that the Secretariat plays its role as you all expect. In this respect, I would like to highlight FAO support and direct contribution of particularly that of the FAO Forestry Department for the revitalization of the Secretariat of Silva Mediterranea Committee. Special thanks go to Ms. Nora Berrahmouni (Forestry Officer (Arid zone forestry) and Mr. Christophe Besacier (Forestry Officer) for the dedicated and committed work towards the achievement of high quality concrete results of the Committee during the last two years (*Launch of the first Mediterranean Forest Week in Antalya with EFIMED, signature of the Collaborative Partnership on Mediterranean Forests, revitalization of the working groups and preparation of regional projects.*). As you all know, several important targets have been reached and many more activities are planned for implementation during the coming months and years (*Second Mediterranean Forest Week in Avignon in April 2011, Steering Committee of the Collaborative Partnership on Mediterranean Forests - Preparation of the first State of Mediterranean Forests in 2011/2012*). Partners' contributions were crucial in achieving these results and I thank all of them for their support which I am sure will continue at country level as well as at the level of the Secretariat. As I will be based in the Near East region, most of whose member countries are members of *Silva Mediterranea*, my interest in strengthening the role of the Committee of *Silva Mediterranea* will continue, as will my direct input and contribution for a higher visibility of the Committee, its tasks and achievements.

Thanks once again and let us hope for a bright future for the Committee of Silva Mediterranea and its Secretariat.

All the best
Moujahed Achouri

Cork and cork oak forests under the spotlights during the reception of FAO Committee on Forestry

4-8 October 2010 were the dates of the 20th Session of the FAO Committee on Forestry (COFO) (www.fao.org/forestry/cofo/en/), hosted by the Organization at its headquarters in Rome, Italy. The biennial sessions of the Committee, the highest-level FAO forestry statutory body, bring together heads of forest services and other senior government officials to identify emerging policy and technical issues, seek informed opinions and solutions on important and topical forest sector issues and to advise FAO and other parties on appropriate action. Many United Nations agencies and programmes, several international governmental and, increasingly, non-governmental organizations, participate in COFO.



This year's COFO session was held in conjunction with the second World Forest Week (WFW), which was designed to provide opportunities for discussions and debates around the theme "*Forests and sustainable development - you are the key*". A key feature of the week, and an important event for the Mediterranean area, was the photo exhibit illustrating "the Art of Cork Manufacturing in Sardinia", with photos taken by the professional photographer, Roberto Graffi.

The idea of an exhibit was agreed upon by the enlarged Executive Committee of the FAO/Silva Mediterranea at its meeting in April 2010 in Antalya, Turkey. Prominently displayed in the FAO Atrium, the exhibit was inaugurated at the reception on 5th October hosted by the Assistant Director-General of the FAO Forestry Department, Mr Eduardo Rojas-Briales, who welcomed participants and highlighted the importance of cork oak forests and the contribution of their products, including cork, and services: biodiversity conservation, desertification and fire prevention, climate change adaptation, etc. In introducing Roberto, Mr. Rojas-Briales referred to the video, photos and book which formed the core of the exhibit and which vividly captured his passion for the cork industry and cork harvesting. The portraits featured in his 40 photographs sensitively reflect the human roots of the industry and the workers' connection to the forests.

Mr Rojas concluded by extending his warm thanks and gratitude to the *Silva Mediterranea* countries, Algeria, Bulgaria, France, Italy, Morocco, Portugal, Spain and Tunisia, which had contributed to the success of the reception with a generous donation of a great number of wine bottles with cork stoppers. Mr Rojas-Briales was followed by Ms Lorenza Colletti, of the Italian *Corpo Forestale dello Stato*, who spoke on behalf of *Silva Mediterranea*, making a brief presentation on the importance of cork forests and cork production in Sardinia.

The event was a great opportunity for *Silva Mediterranea* as a whole and its working group on cork oak in particular to raise awareness and illustrate the importance of cork oak forest landscapes and their contribution to the sustainable development in the Mediterranean as well as the linkages of the forestry sector with the agriculture sector, for example wine production and industry. Cork is produced in only seven Mediterranean countries while vineyards are cultivated and wine produced and consumed all over the world.



The cork exhibit coupled with the wine serving served to showcase how the wine sector, both producers and consumers, can take action in support of the conservation of cork oak forests. By choosing the cork stopper as the closure, the wine producers and consumers will continue to support the cork stoppers market (70% of the economic value of cork production) as well as the livelihoods of people who depend on cork oak forest management and cork industry for their living. Such action might be the only viable way to halt the decline in the cork stoppers market and the consequent loss of interest on the part of cork oak forest managers and owners to invest in the conservation and sustainable management of cork oak forests, leading ultimately to increased degradation and forest loss.

Special thanks from FAO go to:

- **Algeria:** Mr Abdelmalek Titah, Director-General of Forests in Algeria.
- **Bulgaria:** Mr Spas Todorov, President of the *Silva Mediterranea* and Head of International Relations, Executive Forest Agency of the Ministry of Agriculture and Food in Bulgaria
- **France:** Mr Eric Aracil, Conseil Interprofessionnel des Vins du Roussillon et Mr Daniel Bourguoin, Focal point of the *Silva Mediterranea* Cork oak working group in France (Pyrenées Orientales).
- **Italy:** Mr Augusto Pizzamiglio, Mayor commune of Casale Monferrato in Italy and Ms Lorenza Colletti, focal point for *Silva Mediterranea*, from Italian State Forest Service
- **Morocco :** Mr Abderrahim Houmy, Secretary General of the High Commissariat of Water and Forests and combating desertification (HCEFLCD).
- **Portugal :** Sociedade Agricola da Quinta da Lagoalva de Cima (Portugal) and Sogrape vinhos, Maria Carolina Varela, coordinator of the *Silva Mediterranea* Cork oak Working Group and Researcher at INRB
- **Spain:** Mr Avaro Picardo Nieto (Dirección General del Medio Natural, Consejería de Medio Ambiente (*Junta de Castilla y León*) - The European Network of Cork Territories (RETCORK) and the Instituto Catala Del Suro. (ICS)
- **Tunisia:** Mr Reda Lefkih, Director-General of Forests in Tunisia.

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See also the Website of the photographer (www.robetograffi.com)

